

Remarks:

The above amendments and these remarks are responsive to the Office action dated October 20, 2005. Prior to entry of this Amendment, claims 1-40 remained pending in the application, claims 22-40 having been withdrawn from consideration subject to an earlier election/restriction requirement. By this Amendment, applicants have canceled claims 22-40, without prejudice.

In the Office action, the Examiner rejected each of claims 1-21 as being anticipated by U.S. Patent No. 6,221,654 to Quake et al. ("Quake"). Applicants traverse the rejections, contending that the rejected claims are not anticipated or obvious.

Nevertheless, to expedite the issuance of a patent, and to more particularly point out and distinctly claim aspects of the invention that applicants would like to patent now, applicants have amended claims 1, 6, 9, and 15; have canceled claims 14 and 17 (and claims 22-40), without prejudice; and have added new claims 41-52.

Applicants reserve the right to pursue any of the amended or canceled claims in their original form at a later time. Furthermore, applicants have presented arguments showing that claims 1-21 and 41-52 are not anticipated or obvious. Accordingly, in view of the foregoing amendments and the following remarks, applicants respectfully request reconsideration of the application under 37 C.F.R. § 1.111 and allowance of the pending claims.

I. Rejections under 35 U.S.C. § 102

The Examiner rejected claims 1-21 under 35 U.S.C. § 102(b) as being anticipated by Quake. Applicants traverse the rejections, contending that each of the pending claims is patentable over Quake. Nevertheless, applicants have amended claims 1, 6, 9, and 15, and have canceled claims 14 and 17, without prejudice. Each of claims 1-21 (and new claims 51 and 52) is patentable over the art of record for the reasons set forth below.

A. Claims 1-13 and 51

Independent claim 1 is directed to a device for sorting particles in parallel:

1. (Currently Amended) A device for sorting particles in parallel, comprising:

an input reservoir configured to hold a mixture of first particles and one or more second particles;

a transport mechanism configured to move portions of the mixture in parallel from the input reservoir; and

a plurality of sorter units in fluid communication with the input reservoir and configured to receive the portions of the mixture, each sorter unit being configured to selectively move at least one second particle, if received in one of the portions, from a path followed by first particles received in the one portion so that the at least one second particle follows a different path,

wherein the transport mechanism is configured to move particles by dielectrophoresis.

Quake does not teach or suggest every element of amended claim 1. For example, Quake does not teach or suggest a transport mechanism "configured to move particles by dielectrophoresis."

Quake relates largely to a method and apparatus for sorting single polynucleotides based on size. However, Quake also discloses use of the apparatus to sort cells. Polynucleotides/cells are introduced into the inlet of Quake's apparatus "under positive pressure, to achieve a desired flow rate through the channels" or by electroosmotic flow. Within the channels, polynucleotides are disclosed to be moved in relation to a discrimination region via "electrophoretic discrimination" (not dielectrophoretic discrimination) (Figure 4A), "electroosmotic discrimination" (Figure 4B), a valve (Figure 4C), or selective flow stoppage (Figure 4D). Accordingly, Quake discloses use of electrodes for application of an electric field to move charged molecules, such as polynucleotides, but Quake does not teach or suggest the electrodes generating a non-uniform electric field characteristic of dielectrophoresis, for example, to achieve traveling wave dielectrophoresis (see new claim 51).

Furthermore, Quake directs one of skill in the art away from the use of dielectrophoresis to sort cells by suggesting that electric fields are not suitable for cell sorting. In particular, Quake states "since cells typically do not have predictable [] net charge, the directing means are preferably ones employing a valve in the discrimination region."

Accordingly, Quake does not recognize the ability of dielectrophoresis to move particles lacking a net charge, and thus does not teach or suggest a transport mechanism "configured to move particles by dielectrophoresis," as recited by amended claim 1. Therefore, claim 1 should be allowed. Claims 2-13 and 51, which depend from claim 1, also should be allowed for at least the same reasons as claim 1.

B. Claims 15-21 and 52

Independent claim 15 is directed to a device for sorting particles:

15. (Currently Amended) A device for sorting particles, comprising:

an input reservoir configured to hold a mixture of first and second particles;

a fluid supply reservoir configured to hold a fluid; and

a plurality of sorter units in parallel fluid communication with each of the input and fluid supply reservoirs, each sorter unit including a pair of adjacent first and second channels in fluid communication, the first channel being configured to receive a portion of the mixture from the input reservoir, the second channel being configured to receive a portion of the fluid from the fluid supply reservoir, the sorter unit including a piezoelectric mechanism and/or a heater mechanism configured to selectively move at least one of the second particles, if received in the portion from the input reservoir, to the second channel from the first channel.

Quake does not teach or suggest every element of amended claim 15. For example, Quake does not teach or suggest a piezoelectric mechanism and/or a heater mechanism in any portion of the sorting apparatus, and particularly does not teach or suggest such a mechanism included in sorter units to selectively move particles. Therefore, claim 15 should be allowed. Claims 16-21 and 52, which depend from claim 15, also should be allowed for at least the same reasons as claim 15.

II. New Claims 41-52

The present communication adds new claims 41-52. Each of these claims is fully supported by the application as filed. For example, independent claim 41 is supported by claims 1, 11, and 12. In addition, dependent claims 42-50 are supported, respectively, by claims 2-9 and 13. Claim 51 is supported by, for

example, pg. 7, lines 21-24 of the application. Claim 52 is supported by, for example, original claim 15.

Each of new claims 41-52 is patentable over Quake. Independent claim 41 is directed to a device for sorting particles in parallel:

41. (New) A device for sorting particles in parallel, comprising:
an input reservoir configured to hold a mixture of first particles and one or more second particles;
a transport mechanism configured to move portions of the mixture in parallel from the input reservoir; and
a plurality of sorter units in fluid communication with the input reservoir and configured to receive the portions of the mixture, each sorter unit being configured to selectively move at least one second particle, if received in one of the portions, from a path followed by first particles received in the one portion so that the at least one second particle follows a different path,
wherein each sorter unit is in fluid communication with a microplate so that second particles moved by different sorter units are placed in different wells of the microplate.

Quake does not teach or suggest every element of new claim 41. For example, Quake does not teach or suggest each sorter unit being "in fluid communication with a microplate so that second particles moved by different sorter units are placed in different wells of the microplate." Accordingly, claim 41 should be allowed. Claims 42-50, which depend from claim 41, should be allowed for at least the same reasons as claim 41. Furthermore, claims 51 and 52, which depend from claims 1 and 15, respectively, are patentable for the reasons set forth above in Section I.

III. Conclusion

Applicants believe that this application is now in condition for allowance, in view of the above amendments and remarks. Accordingly, applicants respectfully request that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record.

Respectfully submitted,

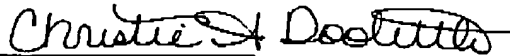
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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to Examiner J. Miller, Group Art Unit 3653, Assistant Commissioner for Patents, at facsimile number (571) 273-8300 on January 18, 2006.



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